Investment opportunities in Chemicals industry in Uzbekistan

December 12-16
Uzbekistan is the largest market in Central Asia; stable and fast growing

Key information

- **Area**: 448,978 sq. km
- **Population**: 32.6M (72% under 40)
- **GDP**: USD 48 billion
- **Capital**: Tashkent (2.3M - official data)
- **Urbanization**: ~50%
- **Official currency**: “Sum” - UZS (UZS/USD = 8’200)
- **Languages**: Uzbek (official), Russian (commonly used)
- **Political system**: Presidential multi-party democratic republic

Comparable to Spain or California
Largest in the region

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Uzbekistan map

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Size of population XX

- XX size of population
Uzbekistan is rich in mineral resources and the country is actively investing in further value chain segments.

Mineral resource diversity excludes the dependence on a single resource type.

<table>
<thead>
<tr>
<th>Resource</th>
<th>Reserves</th>
<th>Production</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural gas &amp; oil</td>
<td>24th</td>
<td>13th</td>
</tr>
<tr>
<td>Gold</td>
<td>10th</td>
<td>9th</td>
</tr>
<tr>
<td>Copper</td>
<td>10th</td>
<td>20th</td>
</tr>
<tr>
<td>Uranium</td>
<td>16th</td>
<td>7th</td>
</tr>
<tr>
<td>Coal</td>
<td>29th</td>
<td>34th</td>
</tr>
</tbody>
</table>

Diversification of the energy supply portfolio:

- **Hydropower**
  - Investments of USD 2.65 billion in 2017–2025 to develop 18 new projects and upgrade 14 existing plants.

- **Solar**
  - ~51 billion tons of oil equivalent

- **Wind**
  - ~360 million tons of oil equivalent for wind energy

Uzbekistan is a rapidly developing economy, pushing for reforms to improve its investment climate

The country’s new president has set the course for structural reforms to help realize Uzbekistan’s economic potential

Shavkat Mirziyoyev was elected president in 2016 declaring a new course of reforms
One of the key priorities of these reforms is the attraction of FDI. As part of this effort the new government has launched a number of initiatives:

- **Liberalization of currency regulation**: exchange rates are market-driven, no limits on purchasing amounts or FX revenues of exporters; Profits repatriation limitations are alleviated
- **Tax reduction**: Effective January 1, 2019, corporate profit tax shall be set at 12%, dividend withholding tax at – 5%; also the reduction of royalty is currently under discussion
- **Customs procedures**: Significant simplifications in customs procedures are implemented adding to speed and transparency of operations

Positive changes result in improved positions of the country in WB’s Doing Business ratings from #166 (2012) to #76 (2018)
Along with improved investment climate, the country’s economy is growing rapidly: Uzbekistan was in top-5 of the world’s most rapidly growing economies, with a real GDP growth rate of 7.9% in 2015-16, 5.3% in 2017 and expected 5% in 2018 and 2019

1. FDI — foreign direct investment
2. BP Statistical review 2018
3. World Bank

International agencies forecasts strong development of the country until 2030:

<table>
<thead>
<tr>
<th>Source</th>
<th>Average GDP growth per annum, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Economist Intelligence Unit</td>
<td>+5.4 %</td>
</tr>
<tr>
<td>International Futures</td>
<td>+5.5 %</td>
</tr>
<tr>
<td>United Nations Statistics Division</td>
<td>+5.9 %</td>
</tr>
<tr>
<td>International Monetary Fund</td>
<td>+5.9 %</td>
</tr>
</tbody>
</table>
Uzkiomyosanoat JSC is a national producer of a large range of chemicals

- **Production**: 14 Industrial enterprises
- **Service**: 6 Service organizations
- **Products**: 180+ nomenclature
- **Staff**: 30k+ employees

**Certification**
- 9001:2015
- 14001:2015
- 50001:2011

**R&D and design institutes**

**Products**: Fertilizers, Non-fertilizer chemicals
- Nitrogen
- Plastic
- Fiber
- Soda ash
- Cosmetics
- Industrial rubber goods
- Other chemical production
Investment opportunity - Melamine production
Melamine production

We invite you to invest in the production of melamine

Growing marker demand - main segments consumers - construction, furniture, coatings

Large list of markets for export due to the high price of the product

Lower capital expenditure due to production on the basis of the existing chemical plant
Melamine is a product with growing demand, the main industry consumers - construction and furniture

World Melamine production, thousand tones

<table>
<thead>
<tr>
<th>Year</th>
<th>Growth rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017</td>
<td>+3%</td>
</tr>
<tr>
<td>2018</td>
<td>2.4</td>
</tr>
<tr>
<td>2019</td>
<td>3.0</td>
</tr>
<tr>
<td>2020</td>
<td>3.9</td>
</tr>
<tr>
<td>2021</td>
<td>4.1</td>
</tr>
<tr>
<td>2022</td>
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Main markets

Construction (residential and non-residential), remodeling and furniture.
The construction industry is growing in Uzbekistan at ~15% per year, main drivers:
- low provision of housing (15 m²/person compared to 21m²/person in Kazakhstan)
- increase in average income
- population increase

Dinnerware, circuit breakers, small appliance housings and cosmetic cases

Automotive, OEM, coil, furniture and appliances

Paper and textiles
Western Europe, Turkey and India are the most promising markets for Uzbekistan melamine

The volume of imports and prices in 2017

1. China's price for export
Building new production on base of existing fertilizer plant improves its economic effectiveness.

- **Existing production**
  - Ferganazot Ammonia production
  - Ferganazot Urea production

- **New production**
  - Ammonia production: 42 kt
  - Carbamide production: 194 kt
  - Melamine production: 60 kt
  - Netback price: 1250 $/t

- **Existing infrastructure**
  - Power (grid)
  - Cooling water, steam
  - Access to railway road
  - Natural gas

**Products**
- Carbamide: 194 kt
- Ammonia + CO₂ + H₂O: 239 kt

**Initial economic assessment**
- **NPV**: $30M
- **IRR**: 12%

**Total CAPEX**: $140M

1. Class 3 estimate
2. @ 10%
Investors are invited to invest $40-50M with IRR = ~20%
Investment opportunity - Phosphate fertilizers
Phosphate fertilizers complex

We invite you to invest in the phosphate fertilizers complex

Phosphate fertilizers are demanded product for agroindustry of Uzbekistan with growth potential x2.4 up to 480 kta P₂O₅

The project includes the development of a new phosphate ore deposit for the needs of the complex

Synergy of process plants improves project economics
New phosphate complex will supply the local Uzbekistan market and export ~30% of its product basket to nearby countries.

Phosphate fertilizers consumption in Uzbekistan, kt P₂O₅ per year
- 2017: 140 kt
- 2030: 480 kt

Phosphate fertilizers production in Uzbekistan, kt P₂O₅ per year
- Production in 2017: 140 kt
- Planned modernizations: 150 kt
- New phosphate complex: 275 kt
- Export values: 85 kt

Consumption growth levers
- Arable land area: +26%
- Fertilizer application rates: x2

Agroindustry plans to use part of fields for repeated sowing - it will require additional fertilizers.

Current consumption is limited by existing production (140 kta) and has the potential to increase by two times.

Sources: World Bank, Food and Agriculture Organization of the United Nations
The project includes the mining complex, acids and fertilizers productions, the total output of P$_2$O$_5$ is 275 kt

Mining complex

<table>
<thead>
<tr>
<th>Quinary for the extraction of phosphate rock</th>
<th>Processing plant phosphor-concentrate</th>
<th>Fertilizers production</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phosphoric ore 2400 kt, 18 % P$_2$O$_5$</td>
<td>Concentrated phosphoric ore 1200 kt, 26 % P$_2$O$_5$</td>
<td>Sulphuric acid 300 kt</td>
</tr>
</tbody>
</table>

Acids production

<table>
<thead>
<tr>
<th>Sulphur (from Mubarek GPP and Shurtaneftgaz)</th>
<th>Phosphoric acid production</th>
<th>Superphosphate production</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulphuric acid production</td>
<td>Phosphoric acid production</td>
<td>MAP, DAP production</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sulphuric acid production</th>
<th>Ammonia (from Navoiazot JSC) 80 kt</th>
<th>Potash chloride and other minerals</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Products</th>
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</thead>
<tbody>
<tr>
<td>Sulphuric acid 300 kt</td>
</tr>
<tr>
<td>Food grade purified phosphoric acid 20 kt</td>
</tr>
<tr>
<td>Triple superphosphate 45 % P$_2$O$_5$</td>
</tr>
<tr>
<td>MAP 358 kt, 52 % P$_2$O$_5$</td>
</tr>
<tr>
<td>DAP 153 kt, 46 % P$_2$O$_5$</td>
</tr>
<tr>
<td>Phosphate salts 32 kt, 56 % P$_2$O$_5$</td>
</tr>
<tr>
<td>Water soluble fertilizers</td>
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</tbody>
</table>

*Final configuration will be defined based on the feasibility study
Cheap raw material, synergy of technological production, high demand for the final products makes the project economically effective

<table>
<thead>
<tr>
<th>Raw materials</th>
<th>Technical synergies</th>
<th>Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phosphoric ore development of the new Tamdybulak field specifically for the complex. Stocks of raw materials exceed 100 years.</td>
<td>Sulphuric acid production own generation of electricity using to the heat released in the process for the needs of the whole complex</td>
<td>Sulphuric acid for the needs Navoy NGMK - one of the largest extraction and refinery mining company in the country</td>
</tr>
<tr>
<td></td>
<td>Fertilizers production flexible adjustment of phosphate fertilizer output to the needs of the market</td>
<td>Food grade purified phosphoric acid B2C product for carbonated soft drinks production</td>
</tr>
<tr>
<td></td>
<td>Phosphoric acid production production of acid of different purity simultaneously for several productions</td>
<td>MAP, DAP, Phosphate salts valuable mixed fertilizers with several active component (nitrogen, potassium, etc)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Triple superphosphate (optional) phosphate fertilizer</td>
</tr>
</tbody>
</table>

$900-960M total CAPEX

Initial economic assessment

NPV¹ $60M
IRR 10-12 %
Investors are invited to invest $190M with IRR= ~19%

<table>
<thead>
<tr>
<th>Overall project financial indicators</th>
<th>Investors financial indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital expenditures $B</td>
<td>960</td>
</tr>
<tr>
<td>IRR %</td>
<td>10-12</td>
</tr>
<tr>
<td>NPV (@10%) $B</td>
<td>70</td>
</tr>
<tr>
<td>Profitability index</td>
<td>1.1</td>
</tr>
<tr>
<td>Payback period (since start of production) Years</td>
<td>6</td>
</tr>
</tbody>
</table>
Other investment opportunities (preliminary)
1. Production of pesticides
2. Production of paints and varnishes
3. Production of household chemicals
4. Hydrogen peroxide production
5. Caustic soda production
Production of pesticides

Indicative CAPEX: US$ 30-40 mln
Indicative Capacity: 10 KTA

Market attractiveness:
- Domestic market size: US$ ~30 mln
- Market expected to grow up to US$ 60-80 mln by 2030
  - Under-consumption of pesticides: 0.9 kg per ha, expected to grow to 1.7 kg per ha by 2030
- No significant pesticides production in other Central Asian countries
  - Central Asia market size: $250 mln in 2017 (excl. UZ)

Raw materials:
- Basic raw materials (chlorine, sulfur, etc.) available locally
- Complex raw materials need to be imported

Potential partner company: BASF, Bayer CropScience
Production of paints and varnishes

Market attractiveness:
- Domestic market size: $US 80 mln. in 2017
  - Per capita consumption: 1.5 kg/person
  - Kazakhstan: 5.3 kg/person (x3.5 vs Uzbekistan)
  - Russia: 8.2 kg/person (x5.5 vs Uzbekistan)
- Market expected to double by 2030
  - Growing household disposable incomes, expected shift toward higher-priced products
  - Strong demand from automotive and construction sectors
- Neighboring countries are net importers

Raw materials:
- Raw materials need to be imported

Potential partner company: BASF Coatings
Production of household chemicals

Indicative CAPEX - US$ 20-40 mln

Production of household chemicals for a growing domestic market

Market attractiveness:
- Laundry detergents market size: 80 KTA in 2017
  - Per capita consumption: 2.5 kg/person, expected to grow to 6 kg/person
- Expected market size: up to 200 KTA by 2030
  - Growing household disposable incomes, expected shift toward higher-priced products
- Neighboring Central Asian countries are net importers

Raw materials:
- Soda ash, baking soda, sodium sulfate: produced in UZ

Potential partner company: Henkel
Hydrogen peroxide production

CAPEX - US$ 15 mln
Project’s capacity:
- Hydrogen peroxide - 10 KTA

Market attractiveness:
- Domestic market size: 5.5 KTA in 2017
- Expected to grow to 10.3 KTA by 2030
- Substantial demand from neighboring countries
- No existing production capacities in the region
  - Central Asia market size: 14 KTA in 2017 (excl. UZ)

Raw materials:
- Sulfuric acid, caustic soda, hydrogen
- All available domestically

Potential partner company: Evonik, Solvay
Caustic soda production

CAPEX - US$ 70 mln

Project`s capacity:
- Caustic soda - 30 KTA
- Chlorine by-product - 28 KTA

Market attractiveness:
- Caustic soda:
  - Domestic market size: 73 KTA in 2017
  - Expected to grow to 154 KTA by 2030
  - Unmet domestic demand up to 56 KTA by 2030
- Chlorine:
  - Demand for chlorine for PVC production project

Raw materials:
- Rock salt: abundant in the country

Potential partner company: ThyssenKrupp
Production of PET

Market attractiveness:
- Domestic market size: US$ ~45 mln including with expectations to grow up to US$ ~450 mln by 2030
- Central Asia market size: $680 mln in 2030 (including UZ)

Polyester fibers are most relevant PET segment for Uzbekistan

Used for fabrics production, which are further used for the production of apparel, home furnishings, and other finished textile good
- #6 country in global cotton production
- 5% - share of textile industry in Uzbekistan GDP
- 18% - annual growth rate of textile industry output
- 13 textile clusters are building in Uzbekistan now

Raw materials:
- Ethylene available locally
- P-xylene need to be imported or new production need to be constructed - aromatics resources available locally

Potential partner company: BASF
Production of catalysts and chemical reagents

Market attractiveness:
- Domestic market size in 2017 US$ ~ 20 mln
- No significant catalysts and chemical reagents production in other Central Asian countries
  - Central Asia market size: $130 mln in 2017 (excl. UZ)

Raw materials:
- Basic raw materials (metals, acids, etc.) available locally
- Complex raw materials need to be imported

Potential partner company: BASF